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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/508,777	09/23/2004	Takuya Yoshimi	Q83562	7965
23373	7590	09/29/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			FISCHER, JUSTIN R	
			ART UNIT	PAPER NUMBER
			1733	

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/508,777	<b>Applicant(s)</b> YOSHIMI ET AL.	
	<b>Examiner</b> Justin R. Fischer	<b>Art Unit</b> 1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2 and 4-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4, 5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura (US 5,931,211, of record) and further in view of Ueyoko (US 5,205,882, of record). As best depicted in Figure 5, Tamura discloses a pneumatic tire construction having a belt comprised of two cord layers 20 and a belt reinforcing layer 22 formed of circumferentially extending reinforcing cords, wherein said cords are preferably formed of polyethylene-2,6-naphthalate or PEN (Column 3, Lines 10-36). While the examples of Tamura only include a 1260D/2 and 1500D/2 construction, it is evident that these constructions are exemplary. This point is further evident from the use of the variable "D" in the twist coefficient having a value between 0.20 and 0.72 (Column 5, Lines 50+). In this instance, one of ordinary skill in the art at the time of the invention would have found it obvious to form the PEN fiber cords of Tamura in accordance to the claimed invention since the examples of Tamura are extremely close to the claimed cord construction and the particular cord construction is a function of the specific tire and the additional reinforcement/tire structure. Furthermore, applicant has not provided a conclusive showing of unexpected results to establish a criticality for a cord construction having a total count of not more than 2,400 dTex.

With respect to the coating rubber, as noted above, Tamura discloses a tire construction having a zero degree belt reinforcing layer formed of PEN fiber cords. In this instance, Tamura describes said PEN fiber cords as having a high modulus of elasticity. The reference, however, fails to suggest the properties of the coating/topping rubber. Ueyoko, on the other hand, is similarly directed to a zero degree reinforcing layer formed of a non-metallic, high modulus reinforcing cord. In this instance, Ueyoko suggests that the coating/topping rubber should be between approximately 3 and 7 MPa (Column 4, Lines 10+), which includes a substantial portion of the claimed range, in order to balance the reinforcement characteristics and the heat generation. As such, one of ordinary skill in the art at the time of the invention would have found it obvious to form the coating/topping rubber of Tamura in accordance to the claimed invention, there being no conclusive showing of unexpected results to establish a criticality for the claimed modulus values. Lastly, in regards to the rebound resilience, such a property represents a mechanical property that is related to the modulus and heat generation—given the teachings of Ueyoko, one of ordinary skill in the art at the time of the invention would have expected the rubber to demonstrate a resilience of at least 60% (low hysteresis or heat generation is associated with higher rebound resilience). **It is emphasized that the relevant composition described by Ueyoko is described as having a “low heat generating characteristic” and such language is recognized as describing a composition having a low hysteresis and a high rebound resilience.**

In regards to Tables 1 and 2, the results are not seen to be persuasive. In particular, the comparative tires contain different cord constructions and twist

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coefficient, as compared to the inventive tires, and as such, it is unclear if the disclosed benefits should be attributed to the cord construction and/or the twist coefficient. It is further noted that Example Tires 2 and 6 additionally have different cord densities or end counts as compared to the comparative tires. Thus, it is evident that Tables 1 and 2 do not provide a conclusive showing of unexpected results.

Regarding claim 2, Tamura teaches a preferred range of 0.20 to 0.50 for the twist coefficient, which fully encompasses the range of the claimed invention. In regards to the cord construction, the exemplary constructions of Tamura are extremely similar to those of the claimed invention (comprises two yarns having similar count). In this instance, the reference fails to expressly suggest values for the total denier or dTex count. Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to form the PEN fiber cord of Tamura with the claimed construction as it is a function of the specific tire being manufactured and the additional reinforcement/tire structure.

As to claims 4 and 5, the fiber cord of Tamura has elongation properties that are consistent with those detailed by the claimed invention (Column 4, Lines 10-25).

Regarding claim 8, Tamura teaches that the belt reinforcing layers are formed by spirally winding narrow, rubber coated strips (Column 3, Lines 20-25).

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura and Ueyoko as applied in claims 1 and/or 2 above and further in view of Yamaguchi (US 5,373,886, of record) and Katsura (US 5,355,925, of record). In regards to the zero degree belt reinforcing layer, Tamura is completely silent with respect the end count or

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cord density. In any event, one of ordinary skill in the art at the time of the invention would have found it obvious to use an end count between 40 and 70 cords per 50 mm since such a range is broad and consistent with the end counts commonly used in similar zero degree reinforcing layers, as shown for example by Yamaguchi (Column 3, Lines 30-40 and Column 5, Lines 50-53) and Katsura (Column 5, Lines 25-35). It is emphasized that the claimed values are consistent with similar zero degree belt reinforcing layers and applicant has not provided a conclusive showing of unexpected results to establish a criticality for the claimed end count.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura and Ueyoko as applied in claims 1 and/or 2 above and further in view of Maathuis (US 4,989,658, of record) and Oare (US 6,634,397, of record). Tamura is completely silent with respect to the gauge of the ribbon strip used to form the belt reinforcing layer. In any event, it is extremely well known that the gauge of such a rubber strip is a function of, among other things, the cord diameter and the type of tire being manufactured.

Maathuis provides one example of a tire having a zero degree reinforcing layer in which the strip gauge is slightly less than that of the claimed invention (Column 3, Lines 1-10)-the reference thus, though, evidence the claimed values as being consistent with similar values used in zero degree reinforcing layers. Oare is additionally applied to evidence the wide range of gauges for similar reinforcement layers as a function of the specific tire and the amount of reinforcement (Abstract). It is emphasized that a wide range of gauges are used in the tire industry and absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found the

claimed range obvious. It is noted that Oare expressly recognizes a wide range of gauges as a function of the type of tire being manufactured and this rationale is equally applicable to zero degree reinforcing layers.

### ***Response to Arguments***

5. Applicant's arguments filed July 12, 2006 have been fully considered but they are not persuasive.

Applicant initially argues that a comparison between the example tire and the comparative tire (equivalent to that disclosed by Tamura) suggests a significant improvement in several characteristics. However, comparative example 1 can only be compared with example tire 1 since they only differ in cord count (additional examples contain variations in multiple parameters). While Example 1 exhibits a slight improvement in rolling resistance, flat spot, and high-speed durability, the parameters of the example are not commensurate in scope with the claimed invention. In particular, the example tire is formed with a coating rubber having a 100% modulus of 1.8 and a resilience of 55, both of which are outside of the ranges defined by the claimed invention. Thus, the results of Table 1 cannot provide a conclusive showing of unexpected results for the combination of a PEN cord in accordance to the claimed invention and a coating rubber having a modulus between 2 and 4 MPa and a resilience of at least 60.

Applicant further contends that the 100% modulus and the rebound resilience are independent parameters and even if the 100% modulus is established, the rebound resilience is never determined naturally. The examiner agrees. However, as detailed

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above, Tamura specifically suggests the use of a coating rubber having low heat generating characteristics, which is equivalent to a low hysteresis value. It is well recognized that both hysteresis and rebound resilience are a measure or indicator of the amount of energy lost during deformation- -the lower the amount of energy lost, the lower the hysteresis and the higher the rebound resilience. Thus, the coating rubber of Tamura, which exhibits a low hysteresis, would be expected to similarly exhibit a high rebound resilience. In particular, the claim defines a broad range between 60 and 100 and one of ordinary skill in the art at the time of the invention would have recognized such values as being consistent with a coating rubber having a high rebound resilience. Lastly, applicant has not provided a conclusive showing of unexpected results to establish a criticality for a rebound resilience of at least 60.

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of




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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R. Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Justin R Fischer  
Primary Examiner  
Art Unit 1733

JRF  
September 27, 2006